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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,180	04/09/2004	Jyh-Chain Lin		1775

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WEI TE CHUNG
FOXCONN INTERNATIONAL, INC.
1650 MEMOREX DRIVE
SANTA CLARA, CA 95050

EXAMINER

DANIELSEN, NATHAN ANDREW

ART UNIT	PAPER NUMBER
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2627

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<p align="center">Office Action Summary</p>	<p>Application No.</p> <p align="center">10/822,180</p>	<p>Applicant(s)</p> <p align="center">LIN, JYH-CHAIN</p>	
	<p>Examiner</p> <p align="center">Nathan Danielsen</p>	<p>Art Unit</p> <p align="center">2627</p>	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau. (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>09 April 2004</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1-18 are pending.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

3. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 2, 4, 5, 12, 13, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA, in view of Aoki (US Patent 6,542,298).

Regarding claims 1 and 15, the AAPA discloses an optical pick-up device comprising (figure 5):

a light source for emitting a linear polarized light beam with a first-type of polarized component

and a second type of polarized component (element 110);

a polarized light beam converter (element 120);

a first splitter for partially transmitting and partially reflecting the linear polarized light beam with

the second type of polarized component (element 140);

a first collimating lens for converging the transmitted linear polarized light beam with the second

type of polarized component onto an optical disc (element 150); and

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a photo-detector for receiving a corresponding light beam reflected by the optical disc (last sentence of ¶ 5 on page 2).

However, the AAPA fails to disclose where the polarized light beam converter converts the first type of polarized component of the linear polarized light beam into the second type of polarized component.

In the same field of endeavor, Aoki discloses a polarized light beam converter converts the first type of polarized component of the linear polarized light beam into the second type of polarized component (figure 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the AAPA with the optical element of Aoki, for the purpose of allowing an optical system to output a linearly polarized beam of a single type having the same polarization (col. 9, lines 47-49).

Regarding claim 2, the AAPA, in view of Aoki, discloses everything claimed, as applied to claim 1. Additionally, the AAPA discloses where the optical pick-up device further comprises a polarized light beam splitter located between the polarized light beam converter and the first splitter (element 130 in figure 5).

Regarding claim 4, the AAPA, in view of Aoki, discloses everything claimed, as applied to claim 1. Additionally, the AAPA discloses where the light source comprises a semiconductor laser (¶ 5).

Regarding claim 5, the AAPA, in view of Aoki, discloses everything claimed, as applied to claim 1. Additionally, the AAPA discloses where the light source comprises a light emitting diode (¶ 5, where it is well known that a semiconductor laser is a type of light emitting diode).

Regarding claim 12, the AAPA, in view of Aoki, discloses everything claimed, as applied to claim 1. Additionally, the AAPA discloses where the first splitter comprises a reflecting face partially reflecting the linear polarized light beam with the second type of polarized component (figure 5).

Regarding claim 13, the AAPA, in view of Aoki, discloses everything claimed, as applied to claim 1. Additionally, the AAPA discloses where the first collimating lens is an aspheric lens (¶ 5).

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6. Claims 3, 7, 8, 10, 11, 14, and 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over the AAPA, in view of Aoki, and further in view of Komatsu (US Patent 5,657,306) and Hasegawa (US Patent 5,708,644).

Regarding claim 3, the AAPA, in view of Aoki, discloses everything claimed, as applied to claim 1. However, the AAPA, in view of Aoki, fails to disclose where the optical pick-up device further comprises a second collimating lens set between the light source and the polarized light beam converter.

In the same field of endeavor, Komatsu discloses where the optical pick-up device further comprises a second collimating lens set between the light source and the polarized light beam converter (element 22 in figure 4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the AAPA with the optical element of Komatsu, for the purpose of converting a divergent beam into a parallel beam (col. 5, lines 17-21).

Regarding claims 6 and 16, the AAPA, in view of Aoki, discloses everything claimed, as applied to claims 1 and 15, respectively. However, the AAPA fails to disclose where the polarized light beam converter comprises a birefringent crystal and a plurality of half-wave plates mounted on a surface of the birefringent crystal.

In the same field of endeavor, Aoki discloses a polarized light beam converter comprising a beam splitter array (elements 321, 322, 325, and 332 in figure 6) and a plurality of half-wave plates mounted on a surface of the beam splitter array (elements 381 in figure 6).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the AAPA with the optical element of Aoki, for the purpose of allowing an optical system to output a linearly polarized beam of a single type having the same polarization (col. 9, lines 47-49). However, Aoki fails to disclose where the beam splitter array comprises a birefringent crystal.

In the same field of endeavor, Komatsu discloses a polarizing beam splitter that splits a beam of light reflected from a magneto-optical recording medium into P-polarized components and S-polarized components such that each polarized component may be individually detected, for the purpose of

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detecting data stored on a magneto-optical recording medium (col. 1, line 41 through col. 2, line 62).

Further, Hasegawa discloses a Wollaston prism which splits a beam of light reflected from a magneto-optical recording medium into P-polarized components and S-polarized components such that each polarized component may be individually detected, for the purpose of detecting data stored on the magneto-optical recording medium (col. 3, line 3 through col. 5, line 12).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted an optical element utilizing a birefringent crystal in place of one utilizing a polarizing beam splitter, as taught by the combination of Komatsu and Hasegawa, for the purpose of isolating the S-polarized components and P-polarized components of a light beam comprising both (col. 4, lines 7-18 of Hasegawa and col. 2, lines 5-19 of Komatsu).

Regarding claims 7 and 17, the AAPA, in view of Aoki, and further in view of Komatsu and Hasegawa, discloses everything claimed, as applied to claims 6 and 16, respectively. However, the AAPA fails to disclose where the polarized light beam converter further comprises a first micro lens array, and a second micro lens array between the first micro lens array and the birefringent crystal.

In the same field of endeavor, Aoki discloses where the polarized light beam converter further comprises a first micro lens array (lens array 200 in figure 8), and a second micro lens array between the first micro lens array and the birefringent crystal (element 310 in figure 7 and unlabeled in figure 8).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the AAPA with the optical element of Aoki, for the purpose of allowing an optical system to output a linearly polarized beam of a single type having the same polarization (col. 9, lines 47-49).

Regarding claim 8, the AAPA, in view of Aoki, and further in view of Komatsu and Hasegawa, discloses everything claimed, as applied to claim 7. However, the AAPA fails to disclose where each lens of the first micro lens array is a convex lens.

In the same field of endeavor, Aoki disclose where each lens of the first micro lens array is a convex lens (figure 7).

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the AAPA with the optical element of Aoki, for the purpose of allowing an optical system to output a linearly polarized beam of a single type having the same polarization (col. 9, lines 47-49).

Regarding claim 10, the AAPA, in view of Aoki, and further in view of Komatsu and Hasegawa, discloses everything claimed, as applied to claim 7. However, the AAPA, in view of Aoki, fails to disclose where the birefringent crystal is a yttrium vanadate crystal or a lithium niobate crystal.

In the same field of endeavor, Hasegawa discloses where the birefringent crystal is an yttrium vanadate crystal or a lithium niobate crystal (col. 3, lines 37-42).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have substituted an optical element utilizing a birefringent crystal made from LiNbO_3 in place of one utilizing a polarizing beam splitter, as taught by the combination of Komatsu and Hasegawa, for the purpose of isolating the S-polarized components and P-polarized components of a light beam comprising both (col. 4, lines 7-18).

Regarding claim 11, the AAPA, in view of Aoki, and further in view of Komatsu and Hasegawa, discloses everything claimed, as applied to claim 6. However, the AAPA fails to disclose where the half-wave plates are attached on the surface of the birefringent crystal by epoxy resin.

In the same field of endeavor, Aoki discloses where the half-wave plates are attached on the surface of the birefringent crystal by epoxy resin (suggested by col. 4, line 65 through col. 5, line 10).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have adhered the half-wave plates to the birefringent crystal (beam splitter array) using an epoxy resin, as suggested by Aoki, for the purpose of holding the various components of a sectioned optical element fixedly and permanently in a specific position (col. 4, line 50 through col. 5, line 10).

Regarding claims 14, and 18, the AAPA, in view of Aoki, and further in view of Komatsu and Hasegawa, discloses everything claimed, as applied to claims 7 and 17, respectively. However, the AAPA fails to disclose where a distance between any two adjacent half-wave plates is equal to a height of

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each half-wave plate, and the height of each half-wave plate is equal with a width of light rays output from a corresponding lens of the second micro lens array.

In the same field of endeavor, Aoki discloses where a distance between any two adjacent half-wave plates is equal to a height of each half-wave plate, and the height of each half-wave plate is equal with a width of light rays output from a corresponding lens of the second micro lens array (col. 9, lines 9-32 and figure 7).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the apparatus of the AAPA with the optical element of Aoki, for the purpose of allowing an optical system to output a linearly polarized beam of a single type having the same polarization (col. 9, lines 47-49).

Allowable Subject Matter

7. Claim 9 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, either alone or in combination, fails to teach or fairly suggest polarized beam converter comprising a pair of micro lens arrays, where the micro lens array adjacent to the birefringent crystal is comprised of concave lenses.

Closing Remarks/Comments

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nathan Danielsen whose telephone number is (571) 272-4248. The examiner can normally be reached on Monday-Friday, 9:00 AM - 5:00 PM Eastern Time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nathan Daniels
01/11/2007



WAYNE YOUNG
SUPERVISORY PATENT EXAMINER